HOPE - Helping Our Peninsula's Environment

Box 1495, Carmel, CA 93921 HOPEinfo@MNCmail.com
831/ 624-6500 www.1hope.org/fluoride.htm

Monterey County Supervisors March 3, 2003

Are you safe drinking Fluoride in your water?

Hello Supervisors,

Monterey County is now taking steps to put fluoride in our Peninsula's drinking water supply as directed by a recent state law. We want you to be aware of the science related to this subject and have included two articles that may interest you. One is an overview of the science. The second is an article put out by US-EPA employees explaining their opposing drinking water flouridation and some critical ethical issues related to EPA's addressing Fluoride in drinking water.

Water fluoridation is typically done in the U.S. by adding sodium fluoride, a waste product of aluminum production, sodium silicoflouride or hydroflousilicic acid to drinking water supplies (at 1 ppm). Sodium fluoride is poisonous in small amounts. In concentrations exceeding 1.5 ppm it "may cause mottling of tooth enamel." Van Nostrands Scientific Encyclopedia, 1976 **Fluorine is the most reactive element and one of the strongest oxidizing agents known.** Id.

Q. What's the difference between the fluoride put in drinking water, toothpaste and rat poison?

A. Absolutely nothing, but the intent.
Rat poison fluoride is highly toxic, *is intended* to kill mammals and it does so easily. Fluoride put in drinking water and toothpaste is chemically identical, but *intended* to "improve" tooth health.

One article explains how there is now substantial research that **fluoridation may have very little, if any, positive effect on teeth.** Separately from its array of known *cumulative* toxicities to humans (including arthritis, mutations and death), water companies may be reluctant to add fluoridation because of the difficulty in controlling the

amount in each gallon of water. Too little (<1 ppm) and there is no effect upon teeth; only slightly more (>1.5ppm) and it can damage teeth.

An alternative you could consider is how Santa Cruz has joined most European countries (e.g. Sweden, Holland, Switzerland, France, Germany) in prohibiting non-consensual medication of the public by means of fluoridating their drinking water through adopting a local initiative.

With all due respect,

David Dilworth, Executive Director

#724 - Fluoridation: Time For A Second Look?, May 10, 2001

by Paul, Ellen and Michael Connett*

In 1997 the union representing scientists, engineers and lawyers at the U.S. Environmental Protection Agency (EPA) in Washington, D.C., voted to support a California citizen initiative to stop fluoridation of public drinking water. In 1999 the union's vice-president released a paper explaining the union's opposition to fluoridation.[1]

Fluoridation is the practice of adding fluoride to the public water supply to reduce dental decay. U.S. fluoridation trials began in 1945 and by 1992 approximately 56% of the U.S. public received its water from fluoridated systems.[2]

Typically, fluoride-containing (or -generating) compounds are added to water to bring the level up to 1 milligram of fluoride ion per liter (1 part per million). In 1986 EPA set a Maximum Contaminant Level (MCL) for fluoride in drinking water at 4 ppm.[3] **The MCL was based on only one adverse health effect: skeletal fluorosis, a crippling bone disease.**

Fluoridation of public water supplies has stirred passionate debate for over 50 years. Now new data is refining the debate. It appears that some of the early claims for fluoridation's benefits were inflated. In recent years tooth decay has declined in both fluoridated and non-fluoridated communities. In fact, **the largest U.S. survey indicates that the benefit to fluoridated communities amounts to 0.6 fewer decayed tooth surfaces per child, which is less than one percent of the tooth surfaces in a child's mouth.**[4]

The public health community justified medicating whole communities via public drinking water using certain arguments that recent research has now shown to be false. For example, in 1945 scientists believed that fluoride had to be swallowed to be effective. However, the Centers for Disease Control (CDC) has recently acknowledged that fluoride's mechanism of action is primarily topical, not systemic.[5] This means that you don't need to swallow fluoride to reap its tiny benefits.

A second early belief, now known to be false, is that fluoride is an essential nutrient. There is no evidence of any disease related to fluoride deficiency. Natural levels of fluoride in human milk (0.01 ppm) are approximately a hundred times less than baby formula reconstituted with fluoridated water.[6]

A third early belief was that dental fluorosis (a defect of the tooth enamel caused by fluoride's interference with the growing tooth) would occur in only about 10% of the children drinking water fluoridated at 1 ppm and would occur only in its mildest form. Today fluorosis occurs on two or more teeth in 30% of children in areas where the water is fluoridated, and not all in its mildest form.[7]

A fourth early belief was that 1 ppm fluoride in drinking water provided an ample margin of safety against toxic effects. Not only is there no safety margin for dental fluorosis but there is growing evidence that there may be no safety margin for changes to bone structure and impacts on the brain, thyroid, and other soft tissues, especially when it is coupled with nutrient deficiencies, particularly iodide.

THE EVIDENCE

1) In 1998 the results of a long-term, low-dose rat study were published.[8] Two groups of rats were exposed to two different kinds of fluoride at 1 ppm in distilled water. A third group received only distilled water. Amyloid deposits (associated with Alzheimer's Disease and other forms of dementia) were elevated in the brains of both fluoridated groups compared to the control group. The authors speculate that fluoride enables aluminum to cross the blood-brain barrier.

2) Millions of people in India and China suffer a crippling bone disease called **skeletal fluorosis,** caused by moderate to high natural levels of fluoride (1.5 to 9 ppm) in their water.[9] Skeletal fluorosis has several stages of severity, with the less severe being chronic joint pain. "Because some of the clinical symptoms mimic arthritis, the first two clinical phases of skeletal fluorosis could be easily misdiagnosed."[3] Arthritis is now at epidemic levels in the U.S. Fluoride's plausible contribution has been ignored, but needs to be taken seriously.

3) Since fluoridation began in 1945 our exposure to other sources of fluoride has increased substantially. These include processing food and beverages with fluoridated water; air pollution from fluoride emitting industries; pesticide residues; vitamins; and dental products. If 1 ppm in drinking water were the only source of fluoride, the average person would ingest 2 milligrams (mg) of fluoride each day, though some may get less because they use bottled water, or they drink less water than the average adult. In 1991, the federal Department of Health and Human Services (DHHS) estimated that the range of exposure in communities with approximately 1 ppm fluoride in the water was 1.58 to 6.6 mg per day.[10]

4) The dose of 1.58 to 6.6 mg per day overlaps the dose found to depress the functioning of the human thyroid gland. At 2.27 to 4.54 mg/day, fluoride has been found to "completely relieve" the symptoms of hyperthyroidism (overactive thyroid).[11] **With fluoride's known capacity to depress thyroid activity, it seems that there may be a link between current fluoride consumption and the prevalence of hypothyroidism (underactive thyroid). More than twenty million people in the U.S. receive treatment for thyroid problems and many others are thought to go undiagnosed.**[12]

5) **Fluoride is a hormone disrupter.** It mimics the action of many water-soluble hormones by interacting with G proteins, which transmit hormonal messages across cell membranes.[13] Additionally, fluoride accumulates in the pineal gland and may reduce melatonin production.[14]

6) **Fluoride (50-75 mg per day) given to osteoporosis patients to strengthen bones has actually increased their rate of hip fractures.**[15,16] Of 18 studies conducted since 1990, 10 have found an association between water fluoridation and hip fractures in the elderly.[17] According to the Agency for Toxic Substances and Disease Registry (ATSDR): "If this effect is confirmed, it would mean that hip fracture in the elderly

replaces dental fluorosis in children as the most sensitive endpoint of fluoride exposure."[18] **Hip fracture is not a minor problem: in the U.S. up to 50,000 people die each year of osteoporosis-related hip fractures.**[19]

7) Some evidence suggests that fluoride causes **bone cancer** in male rats and perhaps in young men.[20, 21]

8) A recent report by the Greater Boston Physicians for Social Responsibility reviews studies showing that fluoride interferes with brain function in young animals and in children, reducing IQ.[22] **Most European countries have rejected fluoridation.** Recognizing that there are simple and effective alternatives, they have applied the precautionary principle. Their children's teeth have not suffered as a consequence. Parents willing to expose their children to fluoride can simply purchase fluoridated toothpaste (which contains 1000 to 1500 ppm fluoride -- read the warning label on the package).[23] The American policy of giving fluoride to children by medicating whole communities with a potent drug that may harm some people seems a dubious practice at best. At worst it violates the primary principle of medical ethics: First do no harm. Furthermore, it violates the ethical principle of informed consent.

In May 2000 the Fluoride Action Network (FAN) was formed by a coalition of activists and scientists from 12 countries (see: http://www.fluoridealert.org). FAN's goal is to end fluoridation and minimize exposure to fluoride. FAN's founding members include the late David Brower; Teddy Goldsmith; Michael Colby; Gar Smith; Terri Swearingen; the union representing professional employees at EPA headquarters; and Dr. Hardy Limeback, Canada's leading dental authority on fluoridation who in 1999 apologized for having promoted fluoridation for 15 years. We urge our colleagues working on public health and environmental issues to become involved and take a second look at fluoridation.

=====

* Paul Connett is professor of chemistry at St. Lawrence University in Canton N.Y.; Ellen Connett is editor of WASTE NOT , 82 Judson, Canton N.Y. 13617; Michael Connett is FAN's webmaster

[1] J. William Hirzy, "Why the union representing U.S. EPA's professionals in Washington D.C. opposes fluoridation," WASTE NOT #448 (May 1, 1999), pgs. 1-4. And see http://www.fluoridation.com/epa2.htm.
[2] Centers for Disease Control and Prevention, National Center for Prevention Services, Division of Oral Health, "Water Supply Statistics" (Atlanta, Georgia: Centers for Disease Control and Prevention, 1993). Available at http://www.cdc.gov/nohss/FSSupplyStats.htm.
[3] Bette Hileman, "Fluoridation of water. Questions about health risks and benefits remain after more than 40 years," CHEMICAL & ENGINEERING NEWS Vol. 66 (August 1, 1988), pgs. 26-42. Available at http://www.fluoridealert.org/hileman.htm.

[4] J.A. Brunelle and J.P. Carlos, "Recent Trends in Dental Caries in U.S. Children and the Effect of Water Fluoridation," JOURNAL OF DENTAL RESEARCH Vol. 69, Special Issue (February 1990), pgs. 723-727 and discussion pgs. 820-823.
[5] Centers for Disease Control, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries," MORBIDITY AND MORTALITY WEEKLY REPORT Vol. 48, No. 41 (October 22, 1999), pgs. 933-940.
[6] C.J. Spak and others, "Fluoride in Human Milk," ACTA PAEDIATRICA SCANDINAVICA Vol. 72, No. 5 (September 1983), pgs. 699-701.
[7] Keith E. Heller and others, "Dental Caries and Dental Fluorosis at Varying Water Fluoride Concentrations," JOURNAL OF PUBLIC HEALTH DENTISTRY Vol. 57, No. 3 (Summer 1997), pgs. 136-143.
[8] Julie A. Varner and others, "Chronic administration of aluminum-fluoride and sodium-fluoride to rats in drinking water: alterations in neuronal and cerebrovascular integrity," BRAIN RESEARCH Vol. 784, No. 1-2 (February 1998), pgs. 284-298.
[9] S.S. Jolly and others, "Human Fluoride Intoxication in Punjab," Fluoride Vol, 4, No. 2 (1971), pgs. 64-79.
[10] Ad Hoc Subcommitttee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs, Public Health Service, Department of Health and Human Services. REVIEW OF FLUORIDE: BENEFITS AND RISKS, REPORT OF THE AD HOC COMMITTEE ON FLUORIDE OF THE COMMITTEE TO COORDINATE ENVIRONMENTAL HEALTH AND RELATED PROGRAMS (February 1991), pg. 17.
[11] Pierre-M. Galletti and Gustave Joyet, "Effect of fluorine on thyroidal iodine metabolism in
hyperthyroidism," JOURNAL OF CLINICAL ENDOCRINOLOGY Vol. 18 (October 1958), pgs. 1102-1110.
[12] Beth Ann Ditkoff and Paul Lo Gerfo, THE THYROID GUIDE [ISBN 0060952601] (New York: Harper, 2000), cover notes.
[13] Anna Strunecka and J. Patocka, "Pharmacological and toxicological effects of aluminofluoride
complexes." FLUORIDE Vol. 32, No. 4 (November 1999), pgs. 230-242.
[14] Jennifer Anne Luke, THE EFFECT OF FLUORIDE ON THE PHYSIOLOGY OF THE PINEAL GLAND , Ph.D Thesis, University of Surrey, United Kingdom (1997). See also Jennifer Luke, "Fluoride Deposition in the Aged Human Pineal Gland," CARIES RESEARCH Vol. 35 (2001), pgs. 125-128.
[15] L.R. Hedlund and J.C. Gallagher, "Increased incidence of hip fracture in osteoporotic women treated with sodium fluoride," JOURNAL OF BONE MINERAL RESEARCH Vol. 4, No. 2 (April 1989), pgs. 223-225.
[16] B.L. Riggs and others, "Effect of fluoride treatment on the fracture rates in postmenopausal women with osteoporosis," NEW ENGLAND JOURNAL OF MEDICINE Vol. 322, No. 12 (March 22 1990), pgs. 802-809.
[17] Paul Connett and Michael Connett, "The Emperor Has No Clothes: A Critique of the CDC's Promotion of Fluoridation," WASTE NOT #468 (October 2000), pgs. 27-28. Available at
http://www.fluoridealert.org/cdc.htm.

[18] Agency for Toxic Substances and Disease Registry, TOXICOLOGICAL PROFILE FOR FLUORIDES, HYDROGEN FLUORIDE, AND FLUORINE (F) [ATSDR/TP-91/17]. (Atlanta, Ga.: U.S. Department of Health and Human Services, April 1993), pg. 57.
[19] K. Phipps, "Fluoride and bone health," JOURNAL OF PUBLIC HEALTH DENTISTRY Vol. 55, No. 1 (Winter 1995), pgs. 53-56.
[20] National Toxicology Program, TOXICOLOGY AND CARCINOGENESIS (December 1990). This NTP study is summarized in reference 10, pgs. 71-73.
[21] Perry D. Cohn, A BRIEF REPORT ON THE ASSOCIATION OF DRINKING WATER
FLUORIDATION AND THE INCIDENCE OF OSTEOSARCOMA AMONG YOUNG MALES. (Trenton, N.J.: New Jersey Department of Health, November 8, 1992).
[22] Ted Schettler and others, IN HARM'S WAY: TOXIC THREATS TO CHILD DEVELOPMENT (Cambridge, Mass.: Greater Boston Physicians for Social Responsibility [GBPSR] , May 2000). Available at http://www.igc.org/psr/ or from GBPSR in Cambridge, Mass.; telephone (617) 497-7440.
[23] Paul Connett and Ellen Connett, "The Fluoridation of Drinking Water: a house of cards waiting to fall. Part 1: The Science," WASTE NOT #373 (November 1996). See Table 2 pgs. 6-7.

Politics behind EPA's Maximum Contaminant Level for Fluoride

Note: The following is not the full statement. We have left out the authors' discussion of the NAEP Code of Ethics. To read their entire statement, visit: http://www.rvi.net/~fluoride/naep.htm

Applying the NAEP Code of Ethics to the Environmental Protection Agency and the Fluoride in Drinking Water Standard

by: Robert J. Carton, Ph.D. J. William Hirzy, Ph.D. National Treasury Employees Union, Chapter 280 Washington, D.C.

ABSTRACT

As stated in the NAEP Code of Ethics and Standards of Practice for Environmental Professionals, the **"keystone of professional conduct is integrity..."** This means that professionals must be responsible for the validity of their work, which must be conducted without "dishonesty, fraud, deceit or misrepresentation or discrimination." They must not put professional judgment aside in order to twist facts and/or conclusions to give a client, or a superior, a desired outcome. Further, professional integrity does not stop when a report is signed. There is a continuing responsibility for seeing that a report is not misrepresented by others, or altered to change its data or conclusions.

In 1997, the National Federation of Federal Employees, Local 2050 (the "Union"), representing all 1400 non-management professionals at the headquarters of the U.S. environmental Protection Agency (EPA), incorporated a modified version of the NAEP Code of Ethics into its Collective Bargaining Agreement with EPA. This paper discusses the Agreement and the need for further refinements of it, along with the event that galvanized this effort, viz. the November 14, 1985 Federal Register notice setting a health-based standard for fluoride in drinking water.

The NAEP (National Association of Environmental Professionals) Code required some minor modifications to better clarify the role of professionals who provide analyses of issues in a regulatory context. Regulations require specific scientific endpoints to be defined. Politicians often demand analyses that support politically acceptable solutions. This presents a serious dilemma in that professional ethics are forced to take a back seat to political expediency. An enforceable code of ethics is needed to permit honest analysis to surface from professional staff without fear of intimidation or reprisal.

The need for a Code of Ethics at EPA has been emphasized time after time since the Agency began in 1970. This need became critical when it published the Fluoride in Drinking Water Standard in 1985. An investigation by the Union revealed that scientific support documents for the health-based standard were crafted to support a long-standing public health policy. Objective scientific methods of data collection and analysis were avoided in favor of presenting information that agreed with current policy. **The National Association of Environmental Professionals (NAEP) Code of Ethics** The NAEP Code of Ethics and Standards of Practice for Environmental Professionals ("NAEP Code")1 states self-evident truths in a way reminiscent of the Declaration of Independence. In the first line it says that "the keystone of professional conduct is integrity." It then expands on the meaning of integrity by noting that professionals must:

1. be responsible for the validity of their own work. 2. ensure that it is done objectively, using the best scientific and engineering principles available. 3. not condone misrepresentation of their work. 4. fully disclose any possible conflict of interest. 5. not be involved in "dishonesty, fraud, deceit, or misrepresentation or discrimination." 6. not accept work if it is contingent upon violating their code of ethics.

The principles outlined in the NAEP Code, if followed, should ensure a healthy profession and result in the respect of those coming into contact with its members. It should be easy for anyone considering joining NAEP to agree with them. There is a second set of statements in the Code which are offered as "guidance" for professionals. Two of these, we believe belong in the list of ethical principles. The first is the statement that one should work on projects for which one is qualified, and the other is that work should be done in concert with laws, regulations, and ordinances. It will become clear as we discuss the application of the code to the activities of EPA why we believe these are necessary.

Environmental Professionals at EPA Headquarters In 1982, all of the non-management scientists, lawyers and engineers working at EPA Headquarters, in their own declaration of independence, decided to organize into a union that could bargain with the Agency over conditions of employment. The organizing committee believed there were so many outstanding grievances with management that the only way to get resolution was by forming a Labor union. According to the Civil Service Reform Act, the Agency must recognize and bargain with a legally constituted union, whereas it can ignore other employee groups, no matter how thoroughly constituted or well-intentioned they may be.

Our grievances with the EPA Administrator (Anne Gorsuch) centered around the misuse of professional services, creating an unethical climate that served politics, but not truth. Management was enamored with the idea that "management rights" included, among other things, mandating the "arranging" or "rearranging" of scientific facts so they support predetermined conclusions. Management acted as if the only moral duty of employees was the duty to obey 2 - even in spite of the results at Nuremberg.

When the required representational election was held in 1984, the Union, the National Federation of Federal Employees, Local 2050 (NFFE), was chosen overwhelmingly by a 90% plurality vote. After lengthy negotiations, we signed our first contract with EPA in 1986. We then began to fight for the ethical and competent practice of science and law at EPA. Our most visible effort - and the one that will be the focus of the remainder of this presentation - was our activity regarding EPA's regulation for fluoride in drinking water, during which we attempted to file an amicus brief in the law suit brought by the Natural Resources Defense Council against EPA in April of 1986 on this issue. We also did a great deal of work on the toxic nature of emissions from latex-backed carpeting that poisoned over 300 EPA employees at EPA Headquarters, and the dangerously explosive nature of aerosol foggers used extensively by ordinary citizens in their homes. In all of these issues, professionals were hindered in or prevented from carrying out their sworn duty to protect the public. We took these issues to the public and the Congress in hope of forcing a change in the ethical climate at EPA.

While these efforts were underway, we came upon a pamphlet from NAEP. It contained a Code of Ethics which immediately struck us as a possible solution to our problems. If we could negotiate an enforceable code of ethics with the Agency, we might have some leverage in eliminating the ethical abuses that were occurring. So, we took the NAEP Code, modified it slightly, and presented it to the Agency in 1988 as a bargaining proposal for negotiations. ...

Applying the Code to the Fluoride in Drinking Water Standard. As stated in the proposed code of ethics, it is the duty of every professional to understand the laws under which they operate. Laws require professionals who are developing the scientific bases for regulations to ask certain questions. In this particular case, the Safe Drinking Water Act of 1975 5 (modified in 1986, "the Act") said that EPA should identify contaminants in drinking water and set a "recommended maximum contaminant level (RMCL)" for each. The Act explains that: RMCLs [changed to MCL goals in 1986] "...are non-enforceable health goals which are to be set at levels which would result in no known or anticipated adverse effects and which allow an adequate margin of safety." [emphasis added]

When the Act says "no known...adverse effects" can occur at the level chosen, that means everyone must be protected: young and old, and those with health problems such as diabetics or those with kidney impairment. EPA is not supposed to protect just the average person, but everyone.

The Act recognized the inherent right of every individual to be able to drink safe water. Setting a standard also means EPA has to consider all other sources of the contaminant, in food, beverages, toothpaste, etc., otherwise, the contribution EPA allowed for water may put some individuals at risk. This is not always an easy task, but it is clear what the considerations must be.

The Act also requires EPA to consider "anticipated adverse effects." For instance, if data show that consumption of a certain amount of a contaminant over 20 years causes disease, then EPA is required to consider the level it would have to set that would be safe over a lifetime. And who should make this call? As noted in the code of ethics, it should be someone qualified to make that judgment. Should a health call be made by politicians or professionals, such as doctors, biochemists, statisticians, chemists, etc. each addressing their particular area of expertise?

EPA is also required to set an enforceable standard for each contaminant called the "Maximum Contaminant Level (MCL)". The Act explains that: MCLs "...are enforceable standards and are to be set as close to the RMCLs as is feasible...'feasible' means with the use of the best technology, treatment

techniques and other means, which the administrator finds are generally available (taking cost into consideration)." The bottom line is that an MCL is a level which may not be safe, or at least not as safe, as the RMCL because in many cases it is just not practical or economical to set a level equal to the RMCL. The best example of how these distinctions are made can be seen in the lead standard. The health goal is zero, but the MCL is 15 ug/l(ppb). The MCL is very much a political decision, although it still must be kept as close to the RMCL as possible.

The RMCL for Fluoride in Drinking Water EPA set an RMCL of 4 mg/l(ppm) for fluoride in drinking water on November 14, 1985. 6 We are now going to examine how that decision was reached in light of the original NFFE code of ethics proposed to EPA. We are selecting only the RMCL because it represents a health judgment unencumbered by political considerations. In the discussion that follows, keep in mind that 1 mg/l of fluoride is the level usually recommended for water fluoridation. This level has been recommended for over 50 years by the Public Health Service without wavering. In 1950, the PHS pronounced fluoridation "safe and effective" 7 and it has made such grand claims ever since. In 1990, Dr. Harald Loe, D.D.S., Director of the National Institute of Dental Research said: "Water fluoridation is one of the most effective and economical public health measures ever undertaken." 8

The Surgeon General's Report In developing the scientific support for its regulatory action, the Agency first turned for guidance to the Public Health Service and asked its chief, Dr. C. Everett Koop, the Surgeon General of the U.S., for his opinion. He in turn formed two ad hoc committees: one to deal with dental effects of fluoride exposure and the other with "non-dental" effects. The story of the latter committee ("the Ad Hoc Committee on the Non-Dental Health Effects of Fluoride in Drinking Water", the "Committee") is the more interesting.

We want to point out, right at the start, that deferring to the Public Health Service was ethically questionable. This is because of the PHS's long history of claiming credit for the discovery of fluoridation and for promoting its use throughout the country. The PHS had the most to lose from revelation of any information that might show that the practice they had been promoting for decades was actually harmful. The PHS proved its bias straight away by selecting Committee members who could be counted on to protect their policy. Many were on record as vigorous promoters of the idea of adding fluoride to water "as totally safe and effective." Some were from the National Institute for Dental Research. On the other hand, **not one critic of fluoridation from the scientific community was allowed a place at the table.** (EPA sent observers to the meetings.) The final report of the Committee 9 also alluded to a group of advisors, who "were asked to review documents and to provide counsel in regard to the Committee's recommendations." Their recommendations may have superseded those of the Committee, although their precise role is, even now, not known.

Despite the biases of the Committee, they provided some genuine surprises. In secret, closed door testimony 10 (obtained under the Freedom of Information Act by the Safe Water Foundation of Texas), the Committee members expressed great uncertainty about the available scientific data and what they should recommend as a safe level of fluoride in drinking water:

"**Q.** Dr. Frank A. Smith: 'Why don't we see it [skeletal fluorosis] in the areas of 4 ppm?' [RMCL = 4 mg/l(ppm)]

A. Dr. Jay R. Shapiro (Committee chairperson): 'I think you have to conclude that we haven't looked for it and we really don't know'."

"**Q.** Dr. Shapiro: 'You have some data on a town in Texas where there were some children with rather severe fluorosis with a level of something like 1.2 ppm in the drinking water. Is that true?'

A. Dr. Smith: I think that is correct'." "Dr. Wallach [referring to dental fluorosis]: **You would have to have rocks in your head, in my opinion to allow your child much more than 2 ppm'."**

These statements were highlighted in an article by investigative reporter, Joel Griffiths, in the Medical Tribune 11 in 1989. He quoted expert after expert saying they just didn't have enough information to make a conclusion, and they often disagreed among themselves. **The Committee eventually concluded, on a vote of 7 to 2, that fluoride should not exceed twice the optimal level of fluoride for children under 9 years of age, viz. 1.4 - 2.4 mg/l.** The draft report of the Committee 12 stated that **"severe dental fluorosis per se constitutes an adverse health effect that should be prevented."** They also expressed concern with the lack of data relative to: "1. The effect of supraoptimal fluoride intake on

bone turnover in children and the relationship of moderate to severe dental fluorosis on skeletal development. "2. The need to confirm or refute Japanese studies implicating chronic fluorosis and myocardial disease. (Takamori, Tokushima, J. Experimental Med. 2:225, 1955)." [in another section of the report they identify these concern levels as 1.9-4.9 mg/l.] To their discredit, however, they said that calcified ligaments [resulting in arthritic pains and a reduction in the flexibility of joints] was not an adverse health effect, unless it was accompanied by crippling skeletal fluorosis with x-rays showing bone lesions. They also recommended a research program: "The committee strongly recommends that the PHS and the EPA join to enlarge the body of information relative to skeletal maturation and growth in children ingesting more than twice the recommended daily intake of fluoride." [i.e. 1.4 to 2.4 mg/l] Once the original conclusions of the Committee became known through the FOIA process, it was obvious that the final report did not track with those original conclusions. The cover page carefully states that the report was "based upon" the Committees recommendations.(emphasis added) According to investigative reporter Dan Grossman, who talked to a number of the Committee members, **the changes were made without the knowledge or consent of the Committee.**13 This is a direct misrepresentation of the efforts of the Committee and an obvious violation of the NFFE Code of Ethics.

The altered conclusions of the final report While the final report stated that the Committee recommended more research on bone in children, **it neglected to mention the Committee had identified a level of concern of 1.4 to 2.4 mg. It also failed to mention the conclusion of the Committee about possible heart effects.** The **final report also added a conclusion that was not in the draft report.** It said: "There exists no directly applicable scientific documentation of adverse medical effects at levels of fluoride below 8 mg/l." It also added the following: "...it can be concluded that 4 times optimum in U.S. drinking water supplies is a level that would provide 'no known or anticipated adverse effect with a margin of safety'."

Dental fluorosis was one of the areas in which some of the most dramatic and far reaching changes were made from the draft to the final report. The firm conclusion that it was an adverse health effect was changed. The final report said: "It is inadvisable for the fluoride content of drinking water to be greater than twice the current optimal level (1.4-2.4 mg/l) for children up to age 9 in order to avoid the uncosmetic effects of dental fluorosis." (emphasis added). This is a health effect that occurs in varying degrees as the teeth of children are forming up until about the age of about 9. The mild form of the disease may only show white spots, while the moderate and severe forms (called objectionable dental fluorosis") are much more disruptive. Severe dental fluorosis is classified by the PHS as follows: "All enamel surfaces are affected and hypoplasia is so marked that the general form of the tooth may be affected. The major diagnostic sign of this classification is the discrete or confluent pitting, brown stains are widespread and teeth often present a corroded-like appearance14." Even after one discounts the unethical omission in the final report of concerns about cardiac and skeletal effects, if the conclusion of the Committee in the draft report that dental fluorosis was an adverse health effect were allowed to stand, then fluoridation as we know it would have been doomed. EPA noted in the proposed rule in May 1985, that severe dental fluorosis was found to occur at 0.8 mg/l. This is at the level that fluoridation policy generally recommends (i.e. 0.7 - 1.2 mg/l depending on the local ambient average temperature). **Since the Act requires a margin of safety, in order to insure that no child would be subjected to this disfiguring disease, the RMCL would have to be set much lower. This would have effectively eliminated the practice of fluoridation, since most water supplies already have naturally occurring fluoride at about 0.2 mg/l.**

This obvious threat was recognized by one of the Committee members, Mr. John Small, an information specialist and one of the chief fluoridation promoters for the National Institute of Dental Research. In a memo to Dr. Jay Shapiro, chairman of the Committee, Mr. Small said: "I think we as a committee need to recognize that this is a departure from the conclusions reached through fifty years of PHS-sponsored eidemiological and clinical investigations. I too feel that moderate and severe dental fluorosis are to be avoided, but am less certain that we should invert history to accomplish that end."15 So the Committee's conclusions were changed to call dental fluorosis a "cosmetic effect" and not an adverse health effect, eliminating it as an end point of concern for possible regulation under the Safe Drinking Water Act. We only learned about these facts much later, when the Union began an investigation of the regulation proposed in May of 1985.

The Cover-up at the U.S.E.P.A. The transcripts of the Committee's deliberations mentioned above show that management officials from EPA were present as observers. There is some evidence that

they tried to influence the Committee towards a lower standard. However, when the final document was delivered to EPA16, knowing full well that it did not accurately represent the deliberations of the Committee, there is no evidence that these EPA officials ever protested.

Sometime in the middle of April, 1985, just one month before the proposed RMCL was published in the Federal Register17, private discussions with key personnel involved in the drafting of the new regulation began to surface some serious ethical problems. It started with a chance meeting between one of the authors (Carton) and a professional from the Office of Drinking Water in a hallway of the East Tower of Waterside Mall, EPA's headquarters. When we saw him in the hallway, he looked disgusted, so we asked him what was going on. He said he was writing the fluoride regulation and didn't believe a thing he was writing. He had to carry on, however, because it was his job. To put it another way, it was his duty to obey. There was also the unstated understanding which all employees know, that if you buck the decision you may end up with a poor performance appraisal or worse. Years later one professional, who blew the whistle on the downgrading of results in the animal cancer study of fluoride in drinking water, was fired, although later rehired after a protracted court battle.18

When the fluoride regulation was published, its author did protest with an unsigned, tongue-in-cheek "press release" that was circulated among the staff.

> "The Office of Drinking Water in conjunction with OMB proudly presents their new and improved Fluoride Regulation or 'How we stopped worrying and learned to love funky teeth.' Up to now EPA, under the Safe Drinking Water Act, has regulated fluoride in order to prevent children from having teeth which looked like they had been chewing brown shoe polish and rocks. The old standard which was based upon the consumer's average shoe size and the phase of the moon generally kept fluoride levels below 2.3 mg/l. EPA in response to new studies which only confirmed the old studies, and some flat out political pressure, has decided to raise the standard to 4 mg/l. This increase will allow 40% of all children to have teeth gross enough to gag a maggot. EPA selected this level based upon a cost effectiveness study which showed that it is cheaper for people to keep their mouths shut then to remove the fluoride."19

As Vice-President of the Union at that time, the lead author of this paper brought the matter of possible fraud to the attention of the Executive Board and it decided to look into the matter. Never having heard anything negative about fluoride in water, they were anxious to find out what was so disturbing about the regulation EPA was about to publish in the Federal Register. The Board's education began when public hearings were held on the proposed standard and some very knowledgeable citizens presented persuasive scientific arguments against the proposal. Among other things, these citizens presented us with the transcripts of the closed door meeting of the Surgeon General's ad hoc committee. **The union became convinced that science did not support what EPA was doing and politics were dictating everything.**

Since then, three other professionals who were working in the Office of Drinking Water at the time the proposal was drafted have come forward. They told us that **it was well known that the data did not fit the conclusions being presented to the public.** As a matter of fact, the original support document for the regulation, written by **the professional staff, had concluded that the data supported a RMCL of 2 mg/l.** The staff believed that objectionable dental fluorosis should be considered an adverse health effect. They conveyed this finding to Mr. Vic Kim, Director of the Office of Drinking Water, who informed the Administrator, Mr. William Ruckelshaus 20 that: "It is difficult to conclude a priori that teeth which spontaneously pit are stronger teeth. Further, data suggest that **the effects of fluorosis are not merely discoloration and pitting, but fracturing, caries and tooth loss as well...it is difficult... to conclude that such effects are not adverse."** According to members of the professional staff in the Office of Drinking Water, Mr. Kim's superior, **Mr. Jack Ravan, Director of the Office of Water, directed that the scientific support documents be rewritten to support an RMCL of 4 mg/l.** The final regulation, signed by the new EPA Administrator, Mr. Lee Thomas, said: "There is no adequate evidence of chipping, cracking or loss of enamel associated with [dental] fluorosis." It was entirely unnecessary for practical or economic reasons to raise the RMCL to 4 mg/l, because it was an unenforceable goal. Practical and/or economic reasons could have been used to raise the MCL to 4 mg/l without playing politics with the health data. As mentioned previously, **this logic was used to set the lead standard.** The health goal was set at zero, while the enforceable standard was established at 15 ug/l(ppb).

Skeletal Fluorosis The Committee identified only **a few adverse health effects: death,** gastrointestinal hemorrhage, gastrointestinal irritation, arthralgias, **and crippling skeletal fluorosis (CSF).**

The last health effect was said to occur at exposure levels lower than the others, so the RMCL and MCL of 4 mg/l are based on CSF. Like dental fluorosis, skeletal fluorosis is the result of fluoride interfering with the normal production and remineralization of collagen. When discussing this disease, experts inevitably refer back to the classic 1937 study by Dr. Kaj Roholm on Danish cryolite workers. 21 Summarizing Roholm's work, the National Academy of Sciences (NAS) described three progressive stages of the disease. 22 In Phase 1, X-rays begin to show changes in the bones of the pelvis and vertebrae. By the time Phase 3 (CSF) is reached, all bones are affected, particularly cancellous bones, and the bones in the extremities are thickened. There is also considerable calcification of the ligaments of neck and vertebral column. In some cases, the vertebrae in the spine are actually fused.

Phase 1 is not just a subclinical stage of the disease seen on X-rays. Roholm found that 10 of 26 workers with Phase 1 had rheumatic pains compared to 1 of 11 workers with no sign of osteosclerosis in their x-rays. Half of all workers with Phase 1 and 2 had a reduced ability to rotate their upper torso. Workers exposed for as little as 2.4 years had Phase 1 of the disease, exposure for 4.8 years for Phase 2, and 11.2 years for Phase 3. EPA inexplicably set the standard based only on the third Phase, CSF. **From a professional health point of view, it is impossible to claim that arthritic pains and reduced body flexibility are not adverse health effects. One can only conclude that not considering Phases 1 and 2 skeletal fluorosis was done to avoid a conflict with current health policy, i.e. its unequivocal pronouncement of safety for water fluoridation.**

The Daily Dose and Time Required to Cause CSF

In his letter transmitting the final report of the Committee to EPA, Surgeon General Koop said that arthritis and CSF both begin to occur simultaneously, when fluoride consumption exceeds 20 mg/day. He also added the caveat that it takes more than 20 years to cause these effects. His assertion differed from the conclusion of the National Academy of Science, which also was a source of advice to EPA on this matter. The NAS, according to EPA in the proposed regulation, reported that it takes only 10 years to cause CSF at a dose of 20 mg/day. EPA, however, decided in the proposed regulation to use Dr. Koop's numbers: ". . .EPA agrees with the Surgeon General that crippling skeletal fluorosis is an adverse health effect which results from intakes of fluoride of 20 mg/day over periods of 20 years or more." Two concerned citizens have identified some serious problems with both the NAS and EPA claims of the dose/time necessary to cause CSF. Ms. Martha Bevis of the Safe Water Foundation of Texas could not find where the 20 mg/day was actually derived. Going back to the original work by Roholm she found that he mentioned a figure of 0.2 mg per kg of body weight, which for the standard 70 kg man would translate into 14 mg. Ms. Darlene Sherrell went further and found that, in 1979, Dr. Hodge had changed his much quoted dose/time figures to a minimum of 10 mg/day for 10-20 years. 23 (emphasis added) EPA referenced the 1979 paper, but used the Surgeon General's figures which were higher for reasons that can only be considered suspect. (Note: While EPA has not yet corrected its figures to correspond to Hodge's reduced figures, the NAS did so in 199324.) There is another serious deficiency with the dose/time figures used by EPA. The Act requires the regulations to protect everyone, not just 20-year-olds. The Committee stated in its final report that "Fluoride in bone increase with age and linearly in relation to fluoride intake." Therefore, it would seem logical to conclude that if 20 mg caused CSF in 20 years, then 10 mg would cause CSF in 40 years. Simple arithmetic tells you that only 5.7 mg a day for a lifetime of 70 years could cause CSF. **This calculation was never done. If it were done (starting with the correct figures of 10 mg/day for 10 years) fluoridation would be stopped today.**

Fluoride Dose from Current Standard of 4 mg/l. In proposing the RMCL of 4 mg/l, EPA noted that 1% of the population drink more than 5.5 liters/day. This means these individuals could be ingesting 22 mg/day or more from drinking water alone. **Since EPA stated unequivocally that 20 mg/day for 20 or more years caused CSF** (forgetting for a moment that these figures are incorrect), **EPA admitted to violating the Act which requires the standard to be set so that no one is at risk of an adverse health effect, in this case CSF.** Although the raw data about water consumption were contained in the proposed regulation, the simple calculation presented here was nowhere to be found. In reality, most water supplies that are not contaminated with industrial pollution, have low levels of naturally occurring fluoride. Surface waters generally average about 0.2 mg/l. Where fluoride is added to water (which is 65% of the country), the level is raised to approximately 1.0 mg/l. **Based on Roholms' work and other recent studies, there is**

every reason to believe that the increasing numbers of people with carpal-tunnel syndrome and arthritic-like pains are due to the mass fluoridation of drinking water.

Summary and Conclusions NAEP's early efforts to define a code of ethics for professionals directly influenced the EPA professionals' Union's own efforts to affect the ethical climate at EPA. In 1988, the Union drafted a Code of Ethics but encountered resistance from EPA management. Nine years later an agreement was reached, although it still does not provide concrete procedures for addressing ethical issues, nor sufficient protection for individuals identifying ethical crimes. The Union believes that an understanding of **the unethical nature of the fluoride drinking water standard** will confirm the urgent necessity for significantly improving the existing agreement between EPA professionals and management.

With regards to the fluoride standard, we found:

* The PHS, who was charged with providing advice to EPA, had a conflict of interest.
* The Committee selected by the PHS to provide advice to EPA was biased.
* The deliberations of the Committee were not honestly presented in their draft report.
* The draft report was altered by unknown individuals without prior (or subsequent) approval of the Committee.
* Individuals who knew of fraud and deceit in the report did not report their observations to the appropriate authorities.
* EPA management ordered the support document developed by EPA professionals to be rewritten in conflict with the known facts.
* Important calculations and observations were omitted from the selection of the final standard for apparently political purposes, namely, to support a long-standing public health policy.

We are unable to present all the details of scientific fraud that occurred in this regulation because of the limits of space in this forum (e.g. **the fact that 90% of the scientific literature showing that fluoride is mutagenic were omitted from the scientific support document.**) Hopefully, some of your elected representatives in Congress will become aware of these accusations and begin an investigation. The public needs to see how politics influences science in Washington, and how public health can take a back seat when power and prestige are more important than ethical considerations.

APPENDIX "ARTICLE XXI. PROFESSIONALISM AT EPA"25 "The Parties agree:

A. The American people must have complete confidence that EPA professionals and managers perform their functions and duties with honesty, integrity, and in an unbiased manner. The public interest is best served when the Agency performs its functions in a manner consistent with the requirements of law, objective and dispassionate science, competent technical analysis and decisions, and concern for effective and consistent enforcement, voluntary compliance and effective implementation.

B. The responsibility to serve the public interest and promote the environmental ethic is the shared responsibility of management and bargaining-unit members. Bargaining-unit employees are encouraged to disclose questionable activities to appropriate officials..

C. Bargaining-unit professionals who disclose or report fraud, waste or abuse or who engage in protected activity may not be subjected to retaliation, reprisal or coercion in employment for doing so.

D. The parties specifically recognize -

1. the ethical obligations stated in the regulations promulgated by the Office of Government Ethics, at 5 CFR 22635.101, EPA's supplemental regulations at 5 CFR Part 6401, and the employee responsibilities under 18 USC 203-209;
2. the prohibited personnel actions stated in 5 USC 2301, enforced by the Office of Special Counsel pursuant to 5 USC 1212 et seq.;
3. to the extent applicable, the employee protections under the Department of Labor Regulations at 29 CFR Part 24;
4. the criminal penalties for false statements to the Federal Government at 18 USC 1001;
5. the provisions of the False Claims Act, 31 USC 3730(h); and
6. new or superseding laws, rules or regulations covering professionalism. Excerpts from the above cited provisions are provided in Supplement 1 to this Agreement for reference.

E. Nothing in this provision negates or supersedes management's rights as enumerated in Article IV of this Agreement.

F. At either Party's request, the Parties will open negotiations one time during the term of this contract on subjects of further protections of employees from reprisals and procedures for resolution of disputes involving professional judgment.

References

1. National Association of Environmental Professionals, "Code of Ethics and Standards of Practice for Environmental Professionals,"undated, available on the WEB at http://www.naep.org/ ethics.html.
2. See characterization of a corrupt government bureaucrat by Charles Trueheart, "Verdict Nears in Trial of Vichy Official," Washington Post, A21, 4/1/98.
3. 5 USC 7103.
4. "Collective bargaining agreement between EPA management and NFFE Local 2050, Article XXI. Professionalism at EPA," .....
5. The Safe Drinking Water Act, 42 U.S.C. 300f, et seq.
6. "National Primary Drinking Water Regulations; Fluoride," Federal Register, 50(220): 47142-47171, 11/14/85.
7. Mullan, F.; Plagues and Politics, the Story of the United States Public Health Service. Basic Books, Inc.
8. Loe, H.; letter to Bernice O. Berg, 3/7/90.
9. Shapiro, J.R.: "Report to the Surgeon General: by the Ad Hoc Committee on the Non-Dental Health Effects of Fluoride in Drinking Water," 9/26/83.
10. Transcript of the "Surgeon General's Ad Hoc Committee on the Non-Dental Effects of Fluoride," 4/18 - 19/1983, National Institutes of Health, Bethesda, Maryland. obtained under the Freedom of Information Act by Ms. Martha Bevis, Safe Water Foundation of Texas.
11. Griffiths, J.; "'83 Transcripts Show Fluoride Disagreements." Medical Tribune, 30(11), 4/20/89.
12. Shapiro, J.R.; first draft of report on the non-dental health effects of fluoride exposure by an ad hoc committee appointed by the Surgeon General of the U.S., 5/26/83.
13. Grossman, D.; "Fluoride's Revenge, Has this cure, too, become a disease?," The Progressive, 29-32, Dec. 1990.
14. McClure, F.J.; Water Fluoridation, the Search and the Victory, HEW, 1970.
15. Small, J.; memo to Jay Shapiro, chairman of Surgeon General's ad hoc committee on the non-dental health effects of fluoride in drinking water, 6/1/83.
16. Koop, C.E.; letter to William D. Ruckelshaus, 1/23/84.
17. "National Primary Drinking Water Regulations; Fluoride," Federal Register, 50(93): 20164-20175, 5/14/85.
18. "Labor Secretary Reich Orders EPA Scientist Dr. Bill Marcus Reinstated, EPA Corruption Exposed," The Fluoride Report, 2(1), April 1994.
19. Press release circulated within EPA Headquarters, 1985.
20. Kim, V.; Memorandum to William Ruckelshaus, 7/26/84.
21. Roholm, K.; Fluorine Intoxication, A Clinical-Hygiene Study, With a Review of the Literature and Some Experimental Investigations. H.K. Lewis & Co., Ltd., London, 1937.
22. National Academy of Sciences, Fluoride: Biological Effects of Atmospheric Pollutants, 1971.
23. Hodge, H.C.; "Safety of Fluoride Tablets or Drops," Chapter 11 in Continuous Evaluation of the Use of Fluorides, (AA Symposium, Boulder, Colorado), Westview Press, 1979.
24. National Academy of Sciences, National Research Council, Health Effects of Ingested Fluoride, p59, 1993.
25. From the Collective Bargaining Agreement between the National Federation of Federal Employees, Local 2050 and the U.S. Environmental Protection Agency, Washington, D.C., September 19, 1997. As of April 20, 1998, EPA professionals are represented by the National Treasury Employees (NTEU) Union, Chapter 280.